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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/262,597	03/04/1999	HOWARD M. KINGSTON	119994-5	9647

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EXAMINER

HYUN, PAUL SANG HWA

ART UNIT	PAPER NUMBER
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1772

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/262,597	Applicant(s) KINGSTON, HOWARD M.	
	Examiner PAUL S. HYUN	Art Unit 1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on March 29, 2004 has been acknowledged. Claims 1-19 remain pending. Applicant amended claims 4, 13, 15, 17 and 18 pursuant to the suggestions set forth in the Office action dated March 10, 2004.

According to the previous Office action, claims 1-13, 5-12, 14, 16 and 19 were allowed, and claims 4, 13, 15, 17 and 18 were objected to. Upon further consideration, new grounds of rejection are made.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. However, Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed applications, Applications No. 08/458,757, 08/357,097 and 08/127,263 fail to provide adequate support or enablement in the

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manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application.

All the claims of the instant application recite the step of analyzing an unvolatilized portion of a volatilized sample to determine the composition of said unvolatilized portion. None of the earlier filed applications mentioned above describes such a step.

In addition, claims 14, 15, 17 and 18 recite the step of adding additional sample to the closed vessel while the contents of the vessel are heated. None of the earlier filed applications mentioned above describes such a step.

Because all of the claims recite a method step not supported by earlier filed application 08/458,757, 08/357,097 or 08/127,263, Applicant's claim for priority will not be granted.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

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The abstract of the disclosure is objected to because it exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Objections

Claim 13 is objected to because of the following informalities:

It appears that the limitation “as” recited in the claim should be “has”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **1-6, 8-10, 13, 16 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuoka et al. (US 5,849,597) in view of Saville (US 4,613,738).

Tokuoka et al. disclose a method of determining the purity of silicon sample (see Abstract and Fig. 1). The method comprises the steps of providing a closed vessel comprising a unitary chamber having a plurality of open compartments, one

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compartment 16 for accommodating a silicon sample, another compartment for accommodating a sample solution 18 of hydrofluoric acid and nitric acid (see lines 18-37, col. 2), and heating the contents of the vessel such that the solution 18 vaporizes and enters compartment 16. When the acid solution enters compartment 16, the solution reacts with silicon and produces silicon tetrafluoride, which vaporizes and enters the compartment holding the acid solution 18. When the cap 2 of the vessel is opened, the gas phase escapes and what remains behind in compartment 16 are the impurities, which can be analyzed (i.e. identity and concentration, see claim 12) to determine the purity of the silicon sample.

The method disclosed by Tokuoka et al. differs from the claimed method in that Tokuoka et al. do not disclose the use of microwave energy to heat the contents of the vessel. Instead, the reference discloses the use of a heating medium or an iron plate (see lines 7-12, col. 11).

Saville discloses a heat facilitated digestion vessel for conducting reactions (e.g. elemental trace analysis, see lines 22-27, col.1) wherein the vessel is designed to be heated by microwave energy (see Abstract). Consequently, the vessel is made from a microwave transparent material such as a fluoropolymer (see lines 55-65, col. 4), and comprises a vent tube 54 for releasing the gas phase. Saville discloses that the use of microwaves requires less time to heat a sample than traditional heating methods that utilize hot plates (see lines 15, 20, col. 1). In light of the disclosure of Saville, it would have been obvious to one of ordinary skill in the art to use microwave energy to heat the contents of the vessel disclosed by Tokuoka et al. Naturally, it would have been obvious

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to one of ordinary skill in the art to design the vessel disclosed by Tokuoka et al. as specified by Saville such that it is suitable for microwave heating.

Claim **7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuoka et al. in view of Saville as applied to claims 1-6, 8-10, 13, 16 and 19 above, and further in view of Dumler et al. (US 5,436,164).

While Tokuoka et al. disclose the use of monocrystal silicon wafers as a sample, neither Tokuoka et al. nor Saville disclose the use of polycrystalline silicon as a sample.

Dumler et al. disclose the importance of determining the purity of polycrystalline silicon (see lines 15-25, col. 1). The reference discloses that the manufacture of semiconductors require high quality monocrystalline silicon and that monocrystalline silicon are made from polycrystalline silicon. In light of the disclosure of Dumler et al., it would have been obvious to one of ordinary skill in the art to apply the modified Tokuoka et al. method to determine the purity of polycrystalline silicon.

Claims **11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuoka et al. in view of Saville as applied to claims 1-6, 8-10, 13, 16 and 19 above, and further in view of Wallace (US 4,118,282).

Neither Tokuoka et al. nor Saville disclose the operating frequency of the microwave source.

Wallace discloses a distillation unit that uses microwave energy to heat a sample (see Abstract). The reference discloses that although microwave frequency ranges from

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300 MHz to 300 GHz, commercially available microwave generators operate at 915 or 2450 MHz (see lines 5-14, col. 3). In light of the disclosure of Wallace, it would have been obvious to one of ordinary skill in the art to conduct the modified Tokuoka et al. method using a microwave generator that operates at 915 or 2450 MHz.

Claims **14, 15, 17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuoka et al. in view of Saville as applied to claims 1-6, 8-10, 13, 16 and 19 above, and further in view of Sperling et al. (US 5,314,664) and Celler et al. (US 4,240,843).

Neither Tokuoka et al. nor Saville disclose the step of introducing additional sample during the digestion process.

Sperling et al. disclose a method of determining the concentration of trace elements in a sample by using continuous microwave digestion (see line 60, col. 2-line 20, col. 3). The method comprises the steps of providing a flow-through reactor having an inlet and an outlet wherein the inlet is connected to a sample source and the outlet is connected to an analyzer for analyzing the digested sample. This set up enables continuous sampling and analysis. Celler et al. disclose the use of liquid silicon to make semiconductor substrates (see lines 1-5, col. 3). In light of the disclosure of Sperling et al. and Celler et al., it would have been obvious to one of ordinary skill in the art to provide a sample inlet for introducing liquid silicon into the modified Tokuoka et al. apparatus for continuously processing and analyzing silicon samples.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL S. HYUN whose telephone number is (571)272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, In Suk Bullock can be reached on (571)-272-5954. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paul S Hyun/
Examiner, Art Unit 1772

/In Suk Bullock/
Supervisory Patent Examiner, Art Unit 1772